## MARYLAND HISTORICAL TRUST DETERMINATION OF ELIGIBILITY FORM

NR Eligible: yes \_\_\_\_

Property Name: Building E5951	Inventory Number: HA-2097					
Address: Edgewood Area, US Army Garrison, Aberdeen Proving Ground (APG)	Historic district: yesX no					
City: APG Zip Code: 21210	County: Harford					
USGS Quadrangle(s): Edgewood						
Property Owner: US Army Garrison, APG	Tax Account ID Number:					
Tax Map Parcel Number(s): Tax Map Nu	mber:					
Project: Restoration Work on Building E5951 Age	ency: US Army Garrison, APG					
Agency Prepared By: R.C. Goodwin and Associates, Inc.						
Preparer's Name: Dean Doerrfeld	Date Prepared: 12/15/2006					
Documentation is presented in:						
Preparer's Eligibility Recommendation: X Eligibility recommend	led Eligibility not recommended					
Criteria: X A B C D Considerations: A	BCDEF _X G					
Complete if the property is a contributing or non-contributing reso	ource to a NR district/property					
Name of the District/Property:	×					
Inventory Number: Eligible:	yes Listed: yes					
Site visit by MHT Staff yes X no Name:	Date:					
Description of Property and Justification: (Please attach map and photo)	a de la companya de					
Known as the Ralph J. Truex Laboratory, Building E5951 is an irregularly mand wall finishes. The main structure measures 124 by 120 feet and is compositive-story laboratory section to the west. This section of the building was conbuilding is to the east.	sed of a two-story office section to the east and a					
The eastern portion of the building is a two story office structure. Constructed masonry veneer, the façade is accented with a ribbon of steel-frame windows second floor interrupted by louvered ventilators. The window areas are finish the illuminated portion of the façade lies a projecting bay holding a loading do behind the loading dock and is evident from the steam and condensate lines p glazed area is a second project bay holding the principal entrance to the build entry also contains a fixed glazed panel to the right and is sheltered by a meta coped parapet wall. Projecting above the wall is a cylindrical structure topped penthouse containing a cooling tower also rises from the roof of the building.	on both levels with the continuity of glazing on the ed with contrasting, concrete panels. To the right of ock. The mechanical service area of the building lies rojecting from the front wall. To the left of the ing. Opened by double-leaf, metal-framed doors the l awning. The flat roof is surrounded by a concrete-					
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MHT Comments:  Reviewer, Office of Preservation Services  Reviewer, National Register Program	8/17/09 Date 8/17/09 Date					

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The south wall of the office portion of Building E5951 repeats the running bond masonry, ribbon of steel-framed windows, and concrete accents seen on the façade. The western portion of the building abuts the offices and rises to a full three stories in height with a basement area. Housing the laboratories, this section of the building also contains a structural steel frame. Wall sheathing appears to be insulated, fiberglass panels. Fenestration is minimal with two, large ventilation grilles and two windows on the first level. Two doors open this elevation with a flush panel door in the first level and a metal door into the basement area. The west elevation contains only two doors in the basement area and ventilation grilles in the upper portions of the wall. The western wall opened on the basement level by a sectional, overhead door in the basement and a metal passage door on the first level. A projecting wing, measuring 76 by 80 feet composes the eastern portion of the west elevation. This section is clad in concrete panels and topped by a flat roof.

A frame annex extends from the south wall of the office building. Constructed of frame and sheathed in vinyl siding, the two stor annex is connected to the main office building by a one-story, gable-roofed segue. Windows of the annex are one-over-one, double-hung, vinyl sash windows. The roof is sheathed in asphalt shingles. The annex dates to a 1989 renovation of the building (Aberdeen Proving Ground n.d.).

The Truex Laboratory was constructed in 1968, and originally housed the Tandem Van de Graaff Nuclear Accelerator. The Army Nuclear Defense Laboratory operated the accelerator from 1968 to about 1974. Research into nuclear matter and nuclear reactions with an emphasis on nuclear structure and force investigations took place at the laboratory (EAI Corporation 1991:E5951). By 1974, the Flame Physics Research Branch controlled the building and performed research into the development of ignition bomblets and ways to thicken simulants. From 1977 to the present, the building has served for research into smoke/obscuration methods, concentrating on ways to mask personnel and equipment on the battlefield, and ways to detect enemy movements throug aerosol obscurants. Additional research in the early 1980s involved the use of Raman Spectroscopy; a method of identifying and quantifying molecules through the use of lasers.

Historic Context

Cold War (1946-1989)

The Cold War era generally is defined as the period beginning in 1946 following Soviet activities to retain territory liberated from Nazi Germany during World War II and extending to the fall of the Berlin wall in 1989. This period was marked by a tense, hostile relationship between the Warsaw Pact countries led by the U.S.S.R. and the North Atlantic Treaty Organization (NATO) Allies led by the U.S.A. The primary role of the U.S. Army during this time was to support U.S. policies of peace through strengtl by maintaining ground force readiness as an alternative to strategic nuclear weapons to deter communist expansion (U.S. Army Environmental Center (AEC) 1997).

The Cold War era was marked by major organizational changes in the armed forces and accompanied by competition for limited military appropriations among the services. Under the 1947 National Security Act, the Air Force became autonomous from the Army, and the Department of Defense was created. Under the new organizational structure, the Army assumed responsibility for conducting land warfare, providing troops for occupation duty in Central Europe, and providing air defense units within the continental U.S. In 1962, the Army's technical services were disbanded, and the Army Materiel Command (AMC) was established. This new command consolidated logistical functions to ensure integrated materiel management, including new product development, management of materiel stockpiles, testing, and technical and maintenance support (AEC 1997). The Ordnance Department and the Chemical Corps activities at APG were transferred to AMC.

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The Cold War era also was marked by significant changes in U.S. Army operations. Instead of relying on a small standing army and mobilizing troops as needed, Army personnel were now ready to enter combat on short notice. This meant that a large, traine standing army was maintained in constant readiness. Troops were stationed for the first time in friendly foreign nations, under an allied command structure. Within the U.S., the Army maintained an active force prepared to deploy quickly into combat zones. During the Cold War, Army personnel were involved in conflicts in Korea and Vietnam, as well as in smaller actions, such as in the Caribbean (AEC 1997).

The Thematic Study and Guidelines: Identification and Evaluation of U.S. Army Cold War Era Military-Industrial Historic Properties (AEC 1997) identified the following significant themes for Army military-industrial history during the Cold War: basic research (laboratories); materiel development and testing (research, development, engineering centers and proving grounds); wholesale logistical operations; air defense, ballistic missile defense and army missiles; command and control, communications, computers, and intelligence; Army school system; operational forces; Army medical activities; and, miscellaneous themes including nuclear power, Army aviation, and activities associated with other services or Department of Defense agencies.

The following historic context for the Cold War era is organized according to the themes outlined in the AEC report. Edgewood Arsenal supported activities that made significant contributions to the Army's development during the Cold War era in the areas o materiel development and testing and medical activities.

The Cold War at Edgewood Arsenal.

During the Cold War era, Edgewood Arsenal functioned primarily as a center for chemical warfare research. This emphasis continued the trend established during World War II, when the historical chemical production mission of the installation was transferred to other chemical munitions arsenals. Immediately following the end of World War II, the Chemical Warfare Service (CWS) was demobilized, but a vigorous defense of the role of chemical warfare ensured its permanent existence. In 1946, the Army redesignated CWS as the Chemical Corps, and Edgewood Arsenal was renamed the Army Chemical Center. However, the role of chemical warfare was a hotly debated topic throughout the Cold War era. During the Cold War era, Edgewood Arsenal served as the national center for materiel development and testing (chemical warfare) and medical activities. Minor missions included wholesale logistical operations and activities undertaken by other departments and non-Army agencies that were located on the property. In 1971, Aberdeen Proving Ground and Edgewood Arsenal were joined administratively.

Materiel development and testing.

Following reorganization in 1951, Edgewood Arsenal became the Research and Engineering Center for the Chemical Corps. In 1962, the Chemical Corps was abolished. The laboratories and production facilities at Edgewood Arsenal were placed under the Chemical-Biological-Radiological Agency (CBR Agency), a subordinate element of Munitions Command under AMC. Subsequent name changes included Chemical Research and Development Center (CRDC) in 1983; Chemical Research, Development and Engineering Center (CRDEC) in 1986; and, Edgewood Research, Development and Engineering Center (ERDEC) under the U.S. Army Chemical and Biological Defense Agency (CBDA) in 1992. In 1993, the name of CBDA was changed to the U.S. Army Chemical and Biological Defense Command (CBDCOM) (Smart 1994).

The chemical laboratories located at Edgewood conducted both basic research and materiel development. The laboratories focused on the development of chemicals as tactical weapons and on defensive measures to counter chemical weapons attack. Basic research included the discovery and development of new chemical agents, incendiaries, and screening and signaling smokes Materiel development focused on improved weapons delivery and dispersal systems, including flame throwers, chemical mortars, and smoke generators. By 1953, the 4.2-inch chemical mortar developed by the Chemical Corps became a standard infantry weapon. In addition, the laboratories conducted research into the development of insecticides, rodenticides, and fungicides, as

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well as tear gas, non-lethal riot control agents, nerve agents, and defoliants (Brophy and Ross 1953; Smart 1994).

Research into defensive measures focused on the development of protective equipment and clothing. Improvements to gas masks for military personnel and civilians resulted in the development of a canister-less gas mask that was introduced during the late 1950s. Detection systems to alert troops to the presence of chemical agents also were researched and developed.

The discovery of chemical warfare stockpiles in the Soviet Union and Iran/Iraq during the 1980s led the Army to reexamine its chemical warfare policies, including defensive measures and retaliatory capabilities. Research efforts were directed to develop new protective gear, such as masks and full body protection, and to develop and produce new binary chemical weapons. The Army's proactive program contributed to negotiations of a bilateral chemical weapons destruction agreement with the Soviet Union in 1990 (Smart 1994).

The chemical laboratories at Edgewood generally were located in the eastern portion of the installation, east of the airfield. While several laboratories were constructed during World War II, the number of laboratory buildings was increased during the Cold War era. New laboratories included Building E-3300, constructed in 1965-66 for advanced studies of supertoxic chemical compounds, radioactive materials, and toxins; Building E-3100, completed in 1967; and, Building E-5100, constructed in 1969 as a quality assurance chemical testing laboratory.

In addition to the chemical laboratories, Edgewood also was the site of a radiological laboratory to evaluate protective equipment against radioactive particles. Radiological research was introduced at Edgewood in 1949, when the Chemical Corps began to explore non-explosive radioactive materials as weapons (Smart 1994). During the Cold War era, the laboratory was responsible for significant contributions in developing procedures for transporting radioactive materials, protection criteria, dosimetry, fallout prediction codes, decontamination procedures, radiation shielding data, waste disposal equipment, vulnerability data, data compilations, and test instrumentation (Schmidt 1976).

During the late 1950s, the radiological laboratory was installed in Building E-5695, initially constructed as a storehouse in 1941. Building E-5697, a concrete building associated with the laboratory, was constructed in 1964. The laboratory operated the Crockcroft Walton positive ion accelerator, acquired in 1960 and dismantled during the early 1970s. In 1968, the Ralph J. Truex Tandem Van de Graaf Facility (Building E-5951) was constructed. The new laboratory contained a Tandem Van de Graaf accelerator that provided beams of precise, variable, and spatially well-defined charged particles for programs in nuclear physics. The accelerator was moved to the University of Pennsylvania in 1974. The Nuclear Effects Laboratory became part of ARDC in 1964, then part of BRL in 1972. In addition to the research buildings, the Nuclear Effects Laboratory utilized 109 acres of Edgewood property as a test area (Schmidt 1976:159).

Edgewood Arsenal also functioned as a proving ground for preliminary and final engineering, user, and field tests for chemical weapons, munitions, agents, protective equipment and other chemical warfare materiel. Proving ground personnel initiated test programs, and developed field techniques and field operating procedures. The purpose of the testing program was to undertake comparative evaluation and analysis and to publish test results (Brophy and Ross 1953). Indoor testing facilities were located in the main laboratory area east of the airfield. These facilities included test chambers, environmental chambers, and a vertical wind tunnel, which was added to Building E-3360 in 1964 (EAI Corporation 1989-1996). Many outdoor tests were conducted on Gunpowder Neck or Carrolls Island.

## Medical Activities.

Medical research was conducted at Edgewood Arsenal throughout the Cold War era. Initially, work was carried out by the Chemical Corps Medical Laboratories, which were divided into five divisions: Biochemistry, Physiology, Technical Services,

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Toxicology, and Clinical Research. Research focused on toxicological research to assist in developing chemical agents and munitions and to assess chemical hazards to personnel and military animals posed by such weapons. Other topics of research interest included wound ballistics and protective body armor; detection of chemical poisons in food and water and methods of purification; practical prophylactic and curative measures to potential chemical exposures; and, decontamination methods. Research facilities included gas chambers, air conditioned test rooms, 149 separate laboratories, and precision scientific instruments of all types (Brophy and Ross 1953).

In 1979, the former Chemical Corps Medical Laboratories were divided among several organizations. The Chemical Corps Research Division was assigned to the Office of the Surgeon General and became the Army Medical Research Institute of Chemical Defense. This laboratory continued research into methods to prevent and treat chemical and biological attacks and worked to develop protective measures, including protective clothing, breathing apparatus, and methods of decontamination (AEC 1997). The U.S. Army Environmental Hygiene Agency continued work into preventive medicine and occupational and environmental health disciplines; this agency is now named the Center for Health Promotion and Preventive Maintenance. The medical activities during the Cold War era generally occupied buildings constructed during World War II until the construction of Building E-3081 in 1979 (Smart 1994).

Wholesale Logistical Operations.

Wholesale logistical operations played a minor role at Edgewood Arsenal during the Cold War. Logistical operations included both production facilities and storage. The production facilities at Edgewood Arsenal operated as they had during World War II. The Army's main chemical production lines were located at other chemical arsenals, while the facilities at Edgewood were used primarily as experimental pilot plants to produce small orders and specialized items.

During the early 1950s, the production facilities comprised about 100 buildings, including manufacturing plants, power generating units, warehouses, utilities, and other facilities. Primary items manufactured at Edgewood included gas masks, smoke for hand grenades, smoke agents, and nerve agents. In addition, facilities were constructed to produce protective clothing. During the last twenty years of the Cold War era, major emphasis was placed on the development of irritant and incapacitating agents and binary munitions and agents that kept chemicals separate until deployment (Brophy and Ross 1953; U.S. Army Environmental Hygiene Agency 1989). Many of these activities occurred in buildings constructed before 1945 located on the western portion of the installation.

Storage at the Eastern Chemical Depot, which was established during World War II on the eastern portion of the installation, was used throughout the Cold War era. During the early 1950s, the depot was used to receive, store, and issue supplies, ammunition, and toxic agents to installations located along the U.S. east coast (Brophy and Ross 1953).

Miscellaneous Activities.

Two activities located on Edgewood property were associated with national Cold War initiatives for air defense and communications. These activities were located at Edgewood because of available land rather than for any direct associations with the Cold War-era missions of the installation.

In 1955-1956, Edgewood became the site of a Nike-Ajax launch facility. The launch facility was one of seven missile sites constructed to protect Baltimore; fourteen sites also were constructed to protect Washington, D.C. The Nike missile system was a tactical air defense system developed by the U.S. Army and private contractors. Work on the system began in 1945 and missiles were deployed in the continental United States between 1954 and the early 1970s, when the system was deactivated. The site at Edgewood Area reflected the pattern typical of Nike installations with three components: (1) magazine, maintenance, and launch area; (2) administration and housing area; and, (3) radar and control area. These three areas were arranged in a linear plan

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extending from north to south. Construction of the site began in January 1954. When completed in 1956, the Edgewood site contained six magazines holding 30 Nike-Ajax missiles. Between 1958 and 1959, the original Nike-Ajax magazines were modified to accommodate Nike-Hercules missiles. One story barracks, administrative, and support buildings also were built during this period. The living area was separated from the main launch site by approximately one-half mile. The site was deactivated in 1974 (Goodwin 1994).

Identified Properties.

During the Cold War era, fewer buildings (283) were constructed at Edgewood Area than at Aberdeen Area. Housing/community support and storage facilities represent the largest categories of construction. The mission-related buildings generally were constructed in the laboratory area located east of Ricketts Point Road. A smaller number of buildings were added to the industrial plant area. The majority of construction at Edgewood is utilitarian in appearance. The laboratories exhibit the most architectural ornamentation, but generally incorporate modern utilitarian design concepts (Dunne 1998).

In general, buildings must be older than 50 years of age to be eligible for listing in the National Register of Historic Places. Properties that have achieved significance within the last 50 years may be eligible for listing in the National Register if they are of exceptional importance under Criteria Consideration G of the National Register Criteria for Evaluation (U.S. Department of the Interior 1991). The Army has developed additional guidance for evaluating Cold War-era properties in DA PAM 200-4 (Section : 3.d(2)(b)) as follows:

□ The Criterion of Exceptional Importance is applied to properties that are less than 50 years old in order to evaluate the National Register eligibility pursuant to 36 CFR 60.4. A Cold War property may have significance under National Register criteria A-D, due to association with major historical events or persons, technological or scientific design achievement, or as a fragile survivor c a class of properties. The significance of Cold War era properties may lie at the national level in association with military themes directly tied to the Cold War, or at the state or local level under other themes.

The Thematic Study and Guidelines: Identification and Evaluation of U.S. Army Cold War Era Military-Industrial Historic Properties (AEC 1997) documents the importance of the Army's military-industrial complex during the Cold Era and emphasizes the Army's direct response to the Cold War. Resources at APG that may possess qualities of significance for listing in the Nationa Register of Historic Places under Criteria Consideration G will be those directly associated with the major APG missions of basic research, materiel development and testing, education, and medical activities. Resources constructed as administration, maintenance, storage, and housing and community support generally will not meet Criteria Consideration G. In addition to historical association, integrity of the resource is a critical component in the evaluation process. Resources that once served as laboratories or test facilities that have been remodeled for other uses, such as administration, may no longer possess sufficient integrity to convey their associations with important Cold War-era activities. Specific guidance on the application of the criteria for evaluation to Cold War era resources is contained in Chapter 7 of Thematic Study and Guidelines: Identification and Evaluation of U.S. Army Cold War Era Military-Industrial Historic Properties (AEC 1997).

## Evaluation

Building E5951 was evaluated against National Register guidelines to determine if it retained those qualities of significance and integrity to merit further consideration for eligibility to the National Register. This building is associated with the Chemical-Biological-Radiological Agency and its successor agencies during the Cold War Era as the principal facility for advanced studies into supertoxic chemical compounds, radioactive materials, and toxins at Edgewood Arsenal (Criterion A). Assessing the National Register eligibility of Edgewood Arsenal, Cold War era resources represents a multi-stepped process. The National Register

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generally defines resources eligible for listing as being 50 years of age or older. Building E5951 fails to meet this threshold level. Exceptions to the age requirement can be made when buildings near 50-years old contribute to a historic district. Under this exception, the building must still contribute to the significance of the National Register District and retain integrity to the period c significance. There are no identified or potentially eligible National Register Districts in the vicinity of this building. The National Register provides guidance on assessing individual resources of exceptional importance to the 50-year rule under Criteria Consideration G. Guidance provided by the Thematic Study and Guidelines: Identification and Evaluation of U.S. Army Cold War Era Military-Industrial Historic Properties refines the application of the National Register criteria to those properties that relate directly to the Cold War Era Military-Industrial Context (USAEC 1997).

The U.S. Army guidance identifies associations in four areas or sub themes within Cold War Military history. Properties that relate directly to the Cold War Military-Industrial context are "defined as those that meet any or all of the following qualifications  $1.\Box$  They were specifically constructed or used prior to 1989 to  $\Box$ 

- -Meet the perceived Soviet/communist military threat; □
- -Project a force designed to influence Soviet policy; and □
- -Affect global opinion of the relationship between the superpowers.
- 2. Through their architectural or engineering design, they clearly reflect one of the Cold War themes.
- 3. They are directly related to the United States/Soviet relationship through association with a milestone event of the period.
- 4. ☐ They are directly related to a United States/Soviet relationship through association with the life of a person during the Cold War period (USAEC 1997:89)."

In addition to meeting the qualifications of the Cold War Military-Industrial context, a resource must also satisfy National Registe criteria and applicable Criteria Considerations. Building E5951 was evaluated against National Register of Historic Places criteria for significance and integrity from its construction in 1968 to the end of the Cold War in 1989.

The property was evaluated under Criterion A for its association with events that have made a significant contribution to the broad patterns of our history. As designed and constructed originally, the building would achieve significance under Criterion A, and the Cold War Military-Industrial context under Qualifications 2 and 3 within the theme of basic research. The building served many purposes since its construction in 1968. The most noteworthy is research into nuclear physics; however, Building E5951 contributed to several Cold Era research programs. After removal of the nuclear accelerator in 1974, the Truex laboratory worked with the flame physics branch in the development of ignition bomblets as an offensive weapon (EAI Corporation 1991). In July 1977, the building was assigned to the aerosol/obscuration sciences section to develop methods to screen troops from enemy observation and in detecting opposing forces through defensive screens. The addition of Raman Spectroscopy during the 1980s increased the array of sophisticated equipment available to researchers in Building E5951. Testing completed in Building E5951 was critical to the materiel research and testing mission of Edgewood Arsenal during the Cold War era.

The building was evaluated under Criterion B for association with individuals linking the research at the Ballistics Research Laboratory with the United States/Soviet relationship during the Cold War period. Archival research yielded no specific information about the activities or impact of a person with Cold War relationships and no scholarly judgement can be made about historic importance. Although the building is named for Ralph J. Truex, it is commemorative in nature and does not illustrate the contributions he made during his career. Building E5951 does not possess association with individuals significant in local, state, a national history to merit further consideration for eligibility to the National Register of Historic Places under Criterion B.

In order to merit further consideration for eligibility to the National Register of Historic Places under Criterion C, a property must achieve significance within a historic context and retain integrity. The method of construction of Building E5951 does not illustrate a unique and distinctive architectural form in its design and construction. Concrete, concrete block, and minimal

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ornamentation are common themes at Edgewood Arsenal, and this building does not possess the characteristics that clearly illustrate its unique purpose. Building E5951 does not possess significant physical design and construction to merit further consideration for eligibility to the National Register of Historic Places under Criterion C.

The Ralph J. Truex Laboratory, Building E5951, possesses those characteristics of significance and integrity to merit consideration for eligibility to the National Register of Historic Places under Criterion A for significant associations with Edgewood Arsenal. The building served as a principal research facility for the successful completion of the materiel development and testing mission at Edgewood by providing laboratory facilities for the analysis of nuclear matter and reactions, ignition bomblets and simulants, obscuration methods, and Raman Spectroscopy. The building retains integrity of materials, design, location, setting, association, feeling, and workmanship. Upgrades of minor components of electronic and computer equipment does not diminish integrity significantly as the building continues to be used for its designed purpose (Advisory Council on Historic Preservation 1991:33).

	obscuration methods, and Raman Spectroscopy. The building retains integrity of materials, design, location, setting, association, feeling, and workmanship. Upgrades of minor components of electronic and computer equipment does not diminish integrity significantly as the building continues to be used for its designed purpose (Advisory Council on Historic Preservation 1991:33).								
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Date

Reviewer, National Register Program

